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Internal Medicine

ATYPICAL PRESENTATION OF SCURB TYPHUS

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ABSTRACT Scrub typhus or bush typhus is caused by Orientia tsutsugamushi. An eschar at the site of bite is evidentiary of scrub typhus. Increased mortality is seen in cases presenting with acute kidney injury (AKI), acute respiratory distress syndrome (ARDS), pneumonitis, meningitis, myocarditis and multi-organ dysfunction. Overlap findings can be noted in scrub typhus meningoencephalitis and other tropical infections. This makes diagnosing the disease more challenging, especially in areas where the burden of infectious diseases is high. We report a cases of scrub typhus meningoencephalitis. Because patients with scrub typhus have an excellent response to treatment, delay in treatment and rate of complications can be prevented with high clinical suspicion of the condition.

KEYWORDS : orientia tsutsugamushi, acute encephalitis syndrome, meningoencephalitis, scrub typhus.

INTRODUCTION:

Scrub typhus is caused by Orientia tsutsugamushi, a trombiculid mite-borne bacterium replicating in endothelial cells and phagocytes. Eschar is the characteristic lesion that starts as a vesicular lesion at the site of mite feeding. Later, an ulcer forms with a black necrotic center, an erythematous border, and regional lymphadenopathy. Other features are fever and maculopapular rash starting from the trunk and spreading to the limbs. It has a predilection for highly vascularized organs such as the brain, heart, lungs, and liver causing severe complications like myocarditis, pneumonia, meningoencephalitis, acute renal failure, gastrointestinal bleeding, and acute respiratory distress syndrome. Up to one-fifth of patients have significant nervous system involvement . In endemic areas of the Indian subcontinent, scrub typhus is increasingly being reported as the cause of meningoencephalitis. Scrub typhus results in high morbidity and mortality if left undiagnosed and untreated. Therefore, it is vital that any case of febrile illness is investigated thoroughly with high suspicion for scrub typhus.

CASE REPORT :

A 32-year-old male native of a Assam presented to Apollo Hospital Guwahati ,emergency department with chief complaints of fever for 10 days ,headache, dysuria, shortness of breath, diarrhea, dry cough and decreased urine output for 5 days. There was no history of headache, nausea, vomiting, abdominal pain or seizures. On examination the patient's blood pressure was 80/40 mmHg, oxygen saturation 96% at room air, pulse rate of 112/minute, respiratory rate 28 per minute and axillary temperature was 100.60F. On systemic examination patient was conscious,obeying commands but confused, no signs of meningeal irritation , all cranial nerves intact bilateral,no focal neurological deficit. Fundoscopy was negative for papilledema. Non-tender hepatosplenomegaly was noted, but there was no evidence of insect bite marks or eschar . Bilateral lung field was clear on auscultation with no added sounds. Cardiovascular examination revealed normal S1S2 with no rub, gallop or murmur. Chest Xray showed no remarkable findings.

Electrocardiogram showed sinus tachycardia.. On evaluation patient had hemoglobin level of 10.2 g/ dL(normocytic,normochromic), white blood cell count was 28,800/µL and platelet count was 89,000/µL. Scrub typhus IgM was positive by immunochromatographic assay while malaria parasite, typhidot and dengue serology revealed negative results. Serum electrolytes revealed hyponatremia at sodium 124 mEq/L and hypokalemia at potassium 2.7 mEq/L which was effectively corrected.

Other laboratory tests included C-Reactive protein -207.3,procal-6.96, D-Dimer 4.39 mg/L, anti- nuclear antibody 0.1 U/ml, bicarbonate 15 mmol/L, prothrombin time 13.0 seconds and INR 1.2, serum amylase 185 U/L, serum lipase 366 U/L and serum ferritin level >1200 ng/ml. Serum uric acid levels was high at 15.1 mg%. Liver function test showed mild elevation of serum aspartate aminotransferase and alanine aminotransferase. Kidney function test revealed serum urea at 110 mg/dL and creatinine 2.7 mg/dL and on quantification urine output was 200ml in 24 hours, patient was planned for hemodialysis but was first put on a trial of conservative management with supportives in the form of fluid management and blood pressure stabilization with inotropic support. As urine output improved to 1200 ml at 96 hours and serum creatinine dropped to 1.8 mg/dl , serum creatinine further improved to 1 mg/dl and with urine output of 1650 ml at 120 hours. Urine routine examination revealed 6-7 pus cells/hpf with pH 4.0. Urine culture and sensitivity remained sterile on repeated samples. Ultrasonography abdomen showing normal sized kidneys (right -114 mm, left -117mm, normal echoes) mild fatty liver and mild splenomegaly.

Non-contrast computed tomography (NCCT) of the brain was obtained, which showed a normal study.MRI brain was also done which showed normal findings . Lumbar puncture was performed, and cerebrospinal fluid (CSF) analysis showed normal cell counts and normal proteins. Neurologist seen and opined as menigoencephilitis. Next day patients confusional state increased and he became restless ,he was started on infusion dexmedetomidine and steroids in form of injectable dexamethasone 2 mg thrice daily .Subsequent day patient sensorium improved ,sedatives tapered down and stopped .Scrub typhus fever management included injection azithromycin 500 mg in 500 ml normal saline 24 hourly for 5 days, oral doxycycline 100 mg 12 hourly for 14 days.

DISCUSSION:

Nervous system involvement is a common complication of scrub typhus infection. Orientia tsutsugamushi enters the CNS by invasion of endothelial cells in blood vessels. Cytokines released by acutely inflamed vascular endothelial cells secondary to invasion in blood vessels damage endothelial integrity causing fluid leakage. There is localized platelet aggregation, polymorphs, and monocyte proliferation, leading to angiitis.[1,8] CNS involvement is a known complication of scrub typhus which ranges from aseptic meningitis to frank meningoencephalitis.[7] Many studies in India and in other countries found that meningoencephalitis is a most common neurological complication of scrub typhus. A study done by Rana et al. found that the most common neurological manifestation was meningoencephalitis(40%).[8]A cross-sectional study on 37 patients published by Mishra et al. found two-thirds of patients with scrub typhus had neurological involvement manifesting as meningoencephalitis, encephalitis, or encephalopathy,[1] but cerebrospinal fluid findings can mimic tuberculous meningitis and viral meningoencephalitis.[7] In a Korean study, 89 patients with severe complications and 119 without severe complications due to scrub typhus were evaluated. In the group with severe scrub typhus, 23 (11.3%) patients had meningoencephalitis.[10] Scrub typhus as a cause of ADEM is extremely rare, pathophysiology is obscure, but it has been postulated to result from an autoimmune response to myelin basic protein triggered by infection as in our cases it may be due to cross reactivity of IgM antibodies to myelin protein.[11] The prognosis of neurological dysfunction is usually favorable. Only a few cases of prominent sequelae have been reported. All three of our patients recovered with no neurological sequelae. The mortality rate was 9% in

a recently published large cohort study of 623 patients hospitalized with scrub typhus infection of varying severity, from mild to critically ill [3]. Meanwhile, a study from India reports a case fatality rate of 49% in encephalitis caused by scrub typhus . Doxycycline for a minimum duration of five days or three afebrile days remains the standard of care. Despite the early use of doxycycline in scrub typhus meningoencephalitis, mortality has been reported owing to its poor penetration of the blood-brain barrier, poor gastrointestinal absorption, antibiotic resistance, and immune-mediated damage . Injectable doxycycline or azithromycin can be a good alternative in such a situation, but their availability is yet another challenge, especially in resource-limited endemic areas.

CONCLUSION:

Neurological manifestations are very common in scrub typhus. Knowledge of these manifestations will enable clinicians to consider scrub typhus as one of the differential diagnoses of acute febrile illness with neurological involvement .The neurological complications in scrub typhus have good prognosis if diagnosed and treated early.

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Patient Consent Declaration

The authors certify that they have obtained all appropriate patient consent.

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